

## VPDES PERMIT PROGRAM FACT SHEET

This document gives pertinent information concerning the VPDES permit listed below. This permit is being processed as a minor industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of §9 VAC 25-260-00 et seq. The process consists of establishing effluent limits for pH, biochemical oxygen demand, total suspended solids, fecal coliform, and total residual chlorine.

1. Facility Name and Address: Gunnoe Sausage Company, Inc.  
3989 Cifax Road  
Goode, VA 24556  
SIC Codes:  
2011, Meat Packing Plants  
2013, Sausages and Other Prepared Meats

Location: 3989 Cifax Road, State Route 643, Goode

2. Permit No. VA0001449 Existing Permit Expiration Date: November 22, 2014

3. Owner Contact: Name: Craig Gunnoe  
Title: Vice President  
Telephone No: (540) 586-1091

4. Application Complete Date: July 9, 2014  
Permit Drafted By: Lewis Pillis Date: August 20, 2014  
DEQ Regional Office: Blue Ridge Regional Office  
Reviewed By: Frank Bowman Date: September 10, 2014  
Public Comment Period Dates: From: September 24, 2014 To: October 24, 2014

5. Receiving Stream Name: Roaring Run River Mile: 3.26  
Basin: Roanoke River Subbasin: Roanoke River Section: 5a Class: III  
Special Standards: PWS

7-Day, 10-Year Low Flow:	0.018 MGD	1-Day, 10-Year Low Flow:	0.015 MGD
30-Day, 5-Year Low Flow:	0.045 MGD	Harmonic Mean Flow:	0.14 MGD
30-Day, 10-Year Low Flow:	0.028 MGD		
High flow tier, Jan – May:			
7-Day, 10-Year Flow:	0.152 MGD	1-Day, 10-Year Flow:	0.130 MGD
30-Day, 10-Year Flow:	0.209 MGD		

Tidal? No

On 303(d) list? Yes

6. **Operator License Requirements:** III

7. **Reliability Class:** N/A

8. **Permit Characterization:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Private | <input type="checkbox"/> Possible Interstate Effect       |
| <input type="checkbox"/> Federal            | <input type="checkbox"/> Interim Limits in Other Document |
| <input type="checkbox"/> State              |   |
| <input type="checkbox"/> POTW               |   |

9. **Facility Description:**

#### NUMBER AND DESCRIPTION OF OUTFALLS

Outfall	Source of Discharge (List operations contributing flow)	Treatment Description Unit by Unit	Flow, MGD*	
			Average	Max 30 day average
001	Kill Room Deboning Room Link Room Holding Pen Wash down Truck wash water	Skim Tank Chemical Addition Hydrofloat Aerated Lagoon, (0.2 – 0.25 MG) Final Clarifier Chlorine Disinfection Dechlorination Step Aerator Aerated Sludge Holding Sludge hauled to Lynchburg POTW	0.0124	0.0195

\*Effluent flows from DMRs. Flows reported on the permit application were long term ave. = 0.0124 with a maximum of 0.0195 MGD. Annual average flow in 2012 was 0.012 MGD and in 2013 was 0.011 MGD.

This facility is both a slaughterhouse and processor. Live hogs are kept in an outside holding pen that has a roof and concrete floor. Averaged over a year, about 20,000 pounds of animals are slaughtered in an average day and about 10,000 pounds of sausage is produced in an average day. Production currently operates one eight-hour shift, four days per week. This amounts to about 2,000,000 pounds a year, based on a 52 week year.

The holding pen is washed down once per day and the washdown water is routed to the head of the wastewater treatment system. Other wastewaters generated at the facility are from the hog killing, deboning and sausage production. An alkaline degreaser, an alkaline soap, bleach and a quaternary ammonium chemical are used in the production area. Some blood

and chunks of fat are present in the raw wastewater. Animal parts and blood are collected for rendering. Rendering wastes are loaded onto trucks within an enclosed area of the facility. Valley Protein picks up the renderings from this facility and transports them off-site.

Preliminary treatment for the removal of large floatable material is provided by the skim tank. The skim tank is located inside the treatment building within a curbed doorway and a grated floor sump. This tank is manually skimmed daily, and pumped to the dissolved air flotation (DAF) unit. Tank skimmings are stored within the building until removal by the rendering company.

The DAF unit went into full operation June 9, 2009, replacing a hydrofloat unit. Chemicals may be added to the effluent prior to entering the DAF, but none have been used in several years. Ferric sulfate is added to lyse blood cells, NaOH to raise the pH and a polymer to aid in flocculation. Fat removed from the DAF is containerized and hauled off-site by the rendering company. Effluent from the DAF is discharged to a lagoon. Using two mixers in the lagoon, the MLSS concentration of 4,500 mg/L is targeted. The lagoon's surface area, estimated from the DEQ GIS, is about 6656 sq. ft. Operators have stated that the lagoon is 4 to 5 feet deep, so that the lagoon volume is estimated to be 0.2 to 0.25 MG. At a monthly average flow of 0.02 MGD, the retention time in the lagoon is about 10 hours.

In cold weather, bacteria are added to the WWTP and polymer may be added to a conditioning tank prior to the final clarifier. Sludge from the clarifier is pumped to the aerated sludge holding tank, where it is stored until picked up by a contract hauler and is taken to the Lynchburg WWTP for disposal. Ashland CEKA 4645, polymer, has been used for the past 10 years. This product is 20 -30% hydrotreated middle petroleum distillate and 1.5 – 5% ethoxylated alcohol (a 12-18 carbon chain), with reported toxicity to *Daphnia magna* of >10 mg/L.

Effluent from the clarifier flows into the chlorination/dechlorination tank. This unit was installed and operational in late July 1997. Chlorination and dechlorination are achieved by using tablets. Wastewater then flows over cascade steps to Roaring Run. A copy of the wastewater treatment flow schematic is found in Appendix A.

There are no boilers at the facility; hot water is provided by gas water heaters.

Storm water that may be contaminated is routed to the WWTP. A trench drain on the loading dock routes floor wash water to the WWTP. The truck maintenance shop is surrounded by gravel. Truck trailers are washed on a concrete pad. The pad drain is routed to the WWTP most of the time, but is routed to the adjacent wet weather stream during heavy rains to prevent hydraulic overload of the WWTP. Truck fueling is not performed on-site.

Storm water from the front or west loading docks flows to an outfall just downstream of the WWTP outfall, whereas loading docks on the north side of the building enter the creek upstream of the WWTP. Spills were not observed in either of these areas.

10. **Sewage Sludge Use or Disposal:** Sanitary wastewater is treated in an on-site drainfield.

11. **Discharge(s) Location Description:**

Name of Topo: Sedalia, VA (a copy is in Appendix A)  
Topo Number: 107B  
Outfall Location: Latitude 37° 24' 31" Longitude 79° 24' 10"

12. **Material Storage:**

Waste oil – 275 gal tank with a short berm, beside the truck maintenance building  
Soda ash, caustic, polymer – stored inside the WWTP building

13. **Ambient Water Quality Information:**

Roaring Run drainage area upstream of the outfall was determined by GIS and is considered superior to that previously performed by hand. The updated upstream drainage area is 0.98 sq.mi., slightly higher than before. The drainage area of Roaring Run is about 3.45 sq.mi.

The closest significant downstream tributary (unnamed) is 0.712 mi downstream, at an approximate elevation of just less than 800 ft. Roaring Run flows for 3.5 miles after Gunnoe before it enters the Big Otter River.

Location	Big Otter river mile
Upstream monitoring station on the Big Otter River, 4ABOR034.32	34.42
Nearest upstream monitoring station on the Big Otter River, 4ABOR033.22, downstream of Rt. 644 Bridge	33.22
<b>Roaring Run enters the Big Otter River, just N of Rt 221</b>	<b>30.61</b>
Nearest downstream monitoring station, 4ABOR024.46, where the Otter River crosses Rt 460, below Elk creek confluence	24.46
Monitoring station on the Big Otter River, upstream of Cobbs Creek Mouth	19.84
Monitoring station on the Big Otter River at the Rt. 24 Bridge	16.26
Monitoring station on the Big Otter River, Rt.644 Bridge in Bedford County	12.18

DEQ conducted several flow measurements on Roaring Run from 1994 to 1998. These measurements are used to estimate the flow in Roaring Run at critical low flow conditions. The flow frequency memo in Appendix B explains this. According to published critical flows at the Big Otter gage, the 7Q10 decreased by 2.4% and the 1Q10 decreased by 1.1%, from the 2005 calculations. Since this is not a significant drop in critical flow, the flows calculated in 2009 will be used in developing this permit.

The water quality of Roaring Run has not been assessed. Roaring Run is in the L25R watershed and flows into the Big Otter River, Upper 1 segment, which extends from the mouth of Roaring Run downstream to the confluence of Elk Creek. Roaring Run is not in the Elk Creek drainage area, although some documents refer to the L25R watershed as the “Elk Creek watershed”. Recreation is impaired in the Upper 1 segment of the Big Otter River due to high numbers of fecal bacteria. The TMDL accounted for discharges of fecal coliform from Gunnoe in the allocation, equal to the average VPDES permit limit, at that time, of 200/100 ml.

Dissolved oxygen has been modeled in Roaring Run in previous permit development. The stream slope can be estimated from the topographic map. Using a GIS map, it is about 2260 feet between where Roaring Run crosses the 840 foot contour and the 820 foot contour. This equates to a stream slope of about 0.0885 ft/ft.

14. **Antidegradation Review & Comments:**

Tier: 1. \_\_\_\_\_ 2.  X  3

The State Water Control Board’s *Water Quality Standards* regulations include an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1, existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The facility is located on a segment of Roaring Run that is not included on the 2004 303(d) Impaired Waters Segments list, the stream is a public water supply, and there is no water quality data for the stream, the receiving waters are designated as Tier 2.

Since the quality of Tier 2 waters is better than required by the standards, no significant degradation of the existing quality is allowed. For purposes of aquatic life protection, “significant degradation” means that no more than 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, “significant degradation” means that no

more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) for aquatic life protection was calculated for each pollutant in the last permit reissuance as follows:

$$0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The antidegradation baseline for human health protection is calculated for each pollutant as follows:

$$0.10 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The “antidegradation baselines” become the new water quality criteria in Tier 2 waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant.

The discharge is in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review was conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and complies with the antidegradation policy contained in Virginia’s Water Quality Standards.

15. **Site Visit:** Date: July 18, 2014 Performed by: Lewis Pillis  
(See Appendix A for a copy of the site visit memorandum.)

16. **Effluent Screening & Limitation Development:**

The following are the maximum pollutant data, which are above the instream WQS, from the discharge in the past 3 years:

<u>Pollutant</u>	<u>concentration, mg/L</u>
pH	8.5 SU
Ammonia	38.2
BOD <sub>5</sub>	14
Nitrate	5.6
Total dissolved solids	183
Chloride	40
Sulfate	13.7
Total phosphorus	2.4
Zinc, dissolved	0.0192
Hardness	20
<i>E. coli</i>	>1600/ 100ml MPN (May 2014)

**Final Limitations Table**

Date: From effective date of permit  
To expiration date

Outfall 001  
SIC Code 2011, 2013

	Less collected	Basis for	Discharge Limitations				Monitoring Requirements	
			Monthly	Max Weekly				

Parameter		Limit	Average	Average	Min	Max	Frequency	Sample Type
Flow (MGD)		NA	NL	NA	NA	NL	Continuous	Recorded
pH (Standard Units)		1,2	NA	NA	6.0	9.0	1/Day	Grab
No of discharge weeks		NA	NA	NA	NA	NL	1/Month	NA
No of weekly samples		NA	NA	NA	NA	NL	1/Month	NA
BOD <sub>5</sub>		3	NL mg/L 0.55 kg/d	NA	NA	NL mg/L 1.1 kg/d	1/D-Week	8HC
Ammonia		1	4.0 mg/L	NA	NA	8.0 mg/L	1/D-Week	8HC
Dissolved Oxygen, mg/L		2	NA	NA	4.0	NA	1/D-Week	Grab
TSS		3	NL mg/L 1.0 kg/d	NA	NA	NL mg/L 2.0 kg/d	1/D-Week	8HC
TRC*		2	11 ug/L	NA	NA	11 ug/L	1/Day	Grab
<i>E. coli</i> **		2	NA	NA	NA	235/100 ml	1/Week	Grab
Fecal Coliform**		1	NA	NA	NA	400/100 ml	1/Year	Grab
Oil and Grease		1, 3	NA mg/L 0.37 kg/d	NA	NA	10 mg/L 0.73 kg/d	1/Month	Grab

The basis for limitations codes are:

1. Technology-based limits; 40 CFR 432, Meat Products Point Source Category; Subparts C and G
2. Water Quality Standards
3. Best Professional Judgment

NL = No Limitation, monitoring required; NA = Not Applicable; I.S. = Immersion Stabilization

\* No more than 3 samples for TRC taken after the chlorine contact tank and prior to dechlorination shall be less than 1.5 mg/L. No TRC sample collected after the chlorine contact tank and prior to dechlorination shall be less than 0.6 mg/L. Note that the TRC sampling frequency after the chlorine contact chamber and prior to dechlorination is 1/day.

\*\*Maximum at any time

DEQ Guidance Memorandum 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq).

Two different Federal Effluent Guidelines (FEGs) for Meat Products apply to this facility. Subpart C – Low-Processing Packinghouse Subcategory (§ 432.30 et. seq.) and Subpart G – Sausage and Luncheon Meats Processors (40 CFR §432.70 et.seq.). Slaughtering has been reduced, but still meets the definition of a low-processing packinghouse. It was reported that only their own carcasses (in whole or parts) are processed and none are brought in any from

the outside. In a given week, daily production may average over 6000 pounds.

Subpart G – Sausage and Luncheon Meats Processors (40 CFR §432.70 et.seq.) apply to this facility, since production exceeds 6000 pounds/day. The effluent limits based on these BPT or BAT guidelines are production based. FEGs for BOD, TSS, O&G, fecal coliform, ammonia and pH apply for plants producing less than 50 million pounds of product a year. A copy of the spreadsheet used in these calculations is included in Appendix C.

Subpart C – Low-processing Packinghouses, § 432.32(a)(1), facilities that slaughter no more than 50 million pounds per year (in units of LWK), also contains BPT FEGs for BOD, TSS, O&G and fecal coliform.

Federal Effluent Guideline parameters must be evaluated to ensure protection of the water quality standards. The limitations necessary to protect the water quality standards, and the limitations in the existing permit will be compared and the most stringent limit for each parameter will be incorporated into the permit.

### **Mixing Zone**

The agency mixing zone program, MIX.EXE, was used to determine whether a complete mix assumption with the receiving stream flow is appropriate. The program indicated that 100 percent of the 7Q10, 30Q10, and 1Q10 may be used for calculating wasteload allocations (WLAs) at the highest monthly average flow and using a stream width of 3 to 6 feet at low flow. About 94% of the 1Q10 can be used when the WWTP discharges at the long term average flow. When the stream width is 3 feet and long term average flow is used 100% of critical flows can be used in modeling. A copy of the print out from the MIX.EXE run is enclosed in Appendix C.

### **Flow**

As in the previous permit, there is no limit for flow; however, flow is to be monitored continuously and recorded. Although Form 2C indicates flow is not intermittent, continuous discharges are usually present only during production operations. Production is higher in the winter months, about three separate times. WWTP discharge will be continuous during each of these times. In the past few years, there has only been a discharge only for a few days at a time. The highest 30 day average flow, from the past 3 years, has been 0.0195.

### **pH**

In accordance with 9 VAC 25-260-50 *Water Quality Standards* for Class III Nontidal Waters (Coastal and Piedmont Zones), pH limitations of 6.0 S.U. minimum and 9.0 S.U. maximum are applied at this outfall. These limitations are equivalent to those in the Federal Effluent Guidelines for Meat and Poultry Products Point Source Category (40 CFR §432.3). The monitoring frequency is once per discharge day, since the facility does not discharge every day.



## **BOD<sub>5</sub>**

The monthly average BOD<sub>5</sub> limitation of 0.55 kg/d in the current permit was based on the Water Quality Management Plan (WQMP) for the Upper Roanoke River Basin. This BOD load was not included in the Water Quality Management Planning Regulation, 9VAC25-720-80 when the WQMP was rewritten as a regulation. The basis in the WQMP was secondary treatment, which was a Best Professional Judgment [BPJ] to apply the Federal Secondary Treatment Regulation, 40 CFR Part 133. The BPJ limits may not be made less stringent, to add the slightly less stringent Federal Effluent Guidelines, due to antibacksliding, 9 VAC 25-31-220. In addition, dissolved oxygen modeling shows that increasing the BOD mass limits could cause an instream dissolved oxygen violation, under certain conditions.

The current BOD permit limits of 0.55 kg/d average and 1.1 kg/d maximum will remain in the reissued permit. The maximum limit was previously established using Agency BPJ procedures (1.5 x monthly average). At average flow, the equivalent BOD concentrations would be 12 mg/L ave and 24 mg/l max and at maximum monthly average flow would be 7.5 mg/L ave and 15 mg/l max. New data shows that high concentrations of ammonia is discharged occasionally. The Agency desktop dissolved oxygen model was used to make sure that these limits are protective of the dissolved oxygen standard.

The treatment system is operated only a couple of days a week. Retention time in the lagoon is about 10 hours or one day's production. Since the discharge is to a small stream, the monitoring frequency will remain once per discharge week and the sample type will also remain an 8-hour composite.

## **Dissolved Oxygen**

Model output indicates that a dissolved oxygen [DO] limit of 4 mg/L is needed to keep DO in the receiving stream above the WQS. Step aeration is present at the WWTP and the discharge has been able to meet this level of oxygenation. Effluent DO has been close to the limit during summer months and monitoring will continue at the same frequency.

## **Ammonia**

Limitations are from the Federal Effluent Guidelines for Meat and Poultry Products Point Source Category (40 CFR §432.73). Since Gunnoe produces less than 50 million pounds of product annually, only the ammonia effluent guideline limitation is applicable. The monthly average ammonia limit is 4.0 mg/L and the maximum limit is 8.0 mg/L. Sample collection will be the same as for BOD, an 8HC, once a week.

## **Total Suspended Solids, TSS**

The same Federal Effluent Guidelines referenced above, contain limitations for TSS. Although there is not a water quality standard for TSS, TSS has been identified as the most probable stressor in many waterbody segments that have impaired for benthic life. To prevent stress on the benthic community, it is prudent that the level of TSS in streams not be increased.

Gunnore's effluent data shows that the maximum TSS discharged in the past 3 years was 0.21 kg/d. Even though the FEG-based limits are slightly higher than the current TSS effluent limits, the current best professional judgment permit limits, 1.0 kg/d monthly average and 2.0 kg/d maximum must remain due to Federal antibacksliding provisions, since they are more stringent.

The current monitoring frequency and sample type will remain the same in the reissued permit.

### **Oil and Grease**

The Federal Effluent Guideline based [EG] limitations for oil & grease are 0.37 kg/d average and 0.73 kg/d maximum. There are no oil & grease water quality standards. The current permit limit of 10 mg/L maximum would equate to a load of 0.53 kg/d at average flow and 0.98 kg/d at an average flow of 0.026 mgd. Depending on the WWTP effluent flow, either the BPJ or the EG is more stringent. Due to this, both of these will be in the reissued permit. The monitoring frequency will remain at once per month.

### **Fecal Coliform and *E. coli***

The maximum fecal coliform limit, 400/100 ml, in the current permit is based on the FEGs, (40 CFR §432.72 and §432.32). Both applicable FEGs state that this limit applies "at any time", so that the FEG is applied as a maximum. Monitoring remains at once/year, since *E. coli*, also serves to monitor bacteria in the effluent.

The permit includes a best professional judgment maximum instead of a geometric mean for the *E. coli* limit for two reasons. First, the facility has a discontinuous discharge and 4 monthly samples to calculate a geometric mean cannot be obtained. While the WQS specify a geometric mean of 126 cfu/100ml and a maximum value of 235cfu/100ml for water quality assessments and beach monitoring, DEQ believes using the maximum as a permit limit is a reasonable interpretation of the WQS. The maximum was derived statistically from the geometric mean and represents a conservative approach; derived from upper percentiles of the frequency distribution around the geometric mean. With 235 CFU, we are utilizing the 75th percentile. This is the more conservative than the 95th percentile, in that a measurement falling above the 75th percentile value of the collected data is somewhat likely to lie beyond the distribution of values that constitute the geometric mean. Whereas, a measurement that falls above the 95th percentile value is very likely to lie beyond the distribution of values that constitute the geometric mean. The maximum based on the 75th percentile is 235 and the maximum based on the 95th percentile is 576. The desired risk

level will be maintained if the total cfu remain under the upper limit of the confidence interval, which is 235 cfu per 100 mL of water.

Second, the use of a geometric mean *E. coli* limit, as a surrogate for fecal coliform, that allows the instantaneous FEG to be exceeded, without exceeding the *E. coli* permit limit is not acceptable. Data obtained from bacteria TMDL development resulted in a logarithmic translator, which has been used by DEQ to estimate *E. coli* from fecal coliform data. Using this translator, 400 fecal coliform equates to 243 *E. coli*. The proposed limit of 235 cfu/100 ml is less than this, and provides reasonable assurance that the FEG for fecal coliform will be met if *E. coli* is less than 235 cfu/100 ml.

The EPA approved TMDL contains a waste load allocation for bacteria, of  $1.07 \times 10^{12}$  cfu/yr, for this facility. The *E. coli* limit is a geometric mean and will apply at all times. The limit of 235/100mL is equivalent to  $0.04 \times 10^{12}$  cfu/year at the maximum 30 day average flow of 0.0124 MGD.

It is staff's best professional judgment that this limitation is a conservative one and will also demonstrate compliance with the TMDL and the FEG.

### **Total Residual Chlorine**

Chlorine is used to reduce bacteria in the effluent. Monitoring to assure adequate disinfection is necessary since bacteria are tested for only once a week. Chlorine should be maintained at 1.5 mg/L in the contact tank since the stream is designated as a public water supply.

For protection of aquatic life, the current permit contains a maximum daily and monthly average limit of 11 ug/L. Current agency procedures were followed to calculate the need for a more stringent numeric limitation. The agency's aWLA and STATS software indicates that a 33 ug/L maximum daily and a 26 ug/L monthly average limit are necessary to protect water quality. Antibacksliding provisions of the Clean Water Act requires that the current, more stringent, limitation be placed in the permit. According to Agency guidance, monitoring will be increased to once a day.

### **Other Water Quality Standard (WQS) Pollutants**

WQS pollutants, chloride, zinc, nitrate, TDS and sulfate, are found in the effluent.

Average of the eleven hardness sample measurements performed by Gunnoe is 19.6 mg/L. Since Gunnoe is near the headwaters of the receiving stream and since water used by Gunnoe is supplied by their well and should have a similar quality as the springs that create the stream. Data for chloride and zinc is compared to a calculated waste load allocation using the Agency MSTRANI spreadsheet (version 2). The stats.exe program is used to show that limits are not needed.

For pollutants that have non-carcinogenic human health WQSs only, such as nitrate, sulfate

and TDS, a mass balance is used rather than the MSTRANI spreadsheet and the STATS program. Since the nearest public water supply intake is over 15 miles downstream, additional dilution is used to calculate these WLAs. Stream flow at 30Q5 is used allowing the entire drainage area from Roaring Run, 3.51 sq.mi.

For nitrate, reported at 5.6 mg/L:

$$WLA = [Cr(Qd+Qs)-QsCs]/Qd = 72 \text{ mg/L};$$

Where: WLA = waste load allocation (concentration)

Qd = effluent flow = 0.026 mgd

Qs = flow (30Q5) = 0.16 mgd

Cs = stream concentration (background) = 0

Cr = Human health criteria from the standards = 10 mg/L

For sulfate, reported at 13.7 mg/L: Cr = 250 mg/L; WLA = 1800 mg/L

For TDS, reported at 183 mg/L: Cr = 500 mg/L; WLA = 3600 mg/L

Since data for each of these pollutants is much lower than the WLA, a permit limit is not needed.

### **Reduced Monitoring**

In accordance with the agency's VPDES Permit Manual (4/01), only facilities having exemplary operations that consistently meet permit requirements are considered for reduced monitoring. To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters, or NOV's, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years. The facility will receive a Warning Letter, for exceeding the FEG fecal coliform limit and failure to submit a 5-day explanation letter. As such, the facility is not eligible for reduced monitoring.

May 2014, fecal coliform at 600/100ml exceeded FEG limit of 400/100ml. Letter of explanation was not received. Discharged in four separate weeks, but only collected 2 samples.

April 2013, BOD excursion reported, 0.66 kg/d (13.8 mg/L at 0.0126 MGD) only sampled twice, but discharged in three separate weeks. No explanation for high BOD could be made by the permittee. Effluent flow on the two days discharging, when the BOD was 13.8 mg/L, was 0.0187 and 0.0126 MGD.

### **Storm Water**

There are no point source discharges of regulated storm water associated with industrial activity that originates from this site. However; there are a couple of industrial activities that have the potential to contaminate storm water and the facility must pay attention to prevent these. Truck washing and truck loading and unloading are activities where extra

effort must be maintained to make are that contaminants do not enter surface water.

17. **Antibacksliding Statement:**

All limits are at least as stringent as in the previous permit.

18. **Compliance Schedules:**

There are no compliance schedules in the reissued permit.

19. **Special Conditions:**

a. **Additional Limitations and Monitoring Requirements for Total Residual Chlorine (TRC) (Special Condition I.B.)**

Rationale: This Special Condition is in accordance with the current Agency procedures with regards to chlorine. If UV replaces chlorine as a disinfectant, the same *E. coli* limit in Part I will apply.

b. **Compliance Reporting Under Part I.A&B (Special Condition I.C.1)**

Rationale: Authorized by *VPDES Permit Regulation*, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

c. **Notification Levels (Special Condition I.C.2)**

Rationale: Required by *VPDES Permit Regulation*, 9 VAC 25-31-200.A. for all manufacturing, commercial, mining, and silvicultural discharges.

d. **Materials Handling/Storage (Special Condition I.C.3)**

Rationale: 9 VAC 25-31-50.A.1. prohibits the discharge of any wastes into the State waters unless authorized by the permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

e. **O&M Manual Requirement (Special Condition I.C.4.)**

Rationale: Required by Code of Virginia § 62.1-44.19; *VPDES Permit Regulation*, 9 VAC 25-31-190 E, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this.

f. **Licensed Operator Requirement (Special Condition I.C.5)**

Rationale: Required by *VPDES Permit Regulation*, 9 VAC 25-31-200 D and The Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), requires licensure of operators.

g. **Total Maximum Daily Load (TMDL) Reopener (Special Condition I.C.6)**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

h. **Water Quality Criteria Reopener (Special Condition I.C.7)**

Rationale: *VPDES Permit Regulation*, 9 VAC 25-31-220 D requires effluent limitations to be established which will contribute to the attainment or maintenance of the water quality standards.

i. **Best Management Practices (Special Condition I.C.9)**

Rationale: *VPDES Permit Regulation*, 9VAC25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law. BMPs previously implemented must be continued.

j. **Toxics Monitoring Program (Special Conditions I.D.)**

Rationale: *VPDES Permit Regulation*, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. DEQ guidance memo 00-2012 recommends TMP testing for animal slaughtering facilities. In addition, the discharge from Outfall 001 comprises about 66 percent of the river at low flow, it is prudent to conduct toxicity testing.

Chronic WET testing has not been fully completed. Testing shall be conducted with a vertebrate and an invertebrate on a quarterly basis at such times when the WWTP discharges for five consecutive days.

January and February are the months where the effluent temperature is probably below 10C the entire month and the chance of polymer being used is the highest. No WET tests have been conducted on samples from these months. This draft permit initially required annual acute WET tests in January and February. During the public comment period, Gunnoe Sausage submitted documentation that polymer was used in 2 acute whole effluent toxicity (WET) tests, March 2012 and December 2011, that did not demonstrate any toxicity. In addition, daily log sheets from January and February 2013, showed that, polymer was used at about the same dosage in these months, as that used in the 3/2012 and 12/2011 WET tests. Gunnoe also reported that they did not use any polymer in the WWTP in January or February 2014. They attributed this to the use of a microbial product in the WWTP during these months.

For these reasons, annual acute WET tests were removed from the draft permit.

k. **Part II, Condition Applicable to All Permits**

Rationale: *VPDES Permit Regulation*, 9 VAC 25-31-190 requires all VPDES permit to contain or specifically cite the conditions listed.

20. **NPDES Permit Rating Worksheet:** Total Score 45

Please see **Appendix A** for a copy of the NPDES Permit Rating Worksheet.

21. **Changes to Permit:**

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	<i>E. coli</i> No./CML	NC		126 geo mean	235 max	PBJ for intermittent dischargers	6/24/14
	Ammonia	NA	1/wk	NA	4.0 ave 8.0 max	FEG, 40 CFR §432.73	6/24/14
	O&G	NC		0.36 ave	0.37	FEG, 40 CFR §432.73 rounding	6/24/14

	No of discharge weeks & samples	NC		NA	NL	PBJ	8/11/14
	TRC, eff	1/Mo	1/day	NC		Permit manual	8/18/14

NC = no change

**Special Conditions:**

Compliance Reporting Under Part I.A&B (Special Condition I.C.1) - language updated

O&M Manual Special Condition reworded

Water Quality Criteria Monitoring (Special Condition I.C.8) – removed

Instream Monitoring (Special Condition I.C.10) removed

Toxics Monitoring Program (Special Conditions I.D.) – revised, second revision due to new information, 11/7/14.

**22. Variances/Alternate Limits or Conditions:**

Since the nearest public water supply intake is over 15 miles downstream, additional dilution is used to calculate WLAs for the protection of human health in drinking water. The human health WLAs will still be easily met at the PWS intake.

**23. Public Notice Information:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Lewis J. Pillis at:

Virginia DEQ  
Blue Ridge Regional Office  
3019 Peters Creek Road  
Roanoke, VA 24019  
540-562-6789 or [lewis.pillis@deq.virginia.gov](mailto:lewis.pillis@deq.virginia.gov)

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board



will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Regional Office by appointment.

24. **303(d) Listed Segments (TMDL):**

According to the 2012 Water Quality Assessment 305(b) and Impaired Waters 303(d) Reports, this segment of Roaring Run has not been assessed. Roaring Run enters the Big Otter River, which is impaired for recreation due to high bacteria levels. This stream segment receiving the effluent contributes to the listed non attainment of fecal coliform in part I of the current approved 303(d) list. EPA approved *The Big Otter River / Elk Creek Bacteria Total Maximum Daily Load (TMDL) Study* on 2/02/2001. It contains a WLA for this discharge of  $1.07 \times 10^{12}$  cfu/year. This permit has a maximum limit of 235 *E. coli* /100ml that is in compliance with the TMDL. At the maximum monthly average flow of 0.0195 MGD and permit limit, Gunnoe Sausage would discharge  $0.063 \times 10^{12}$  *E.coli*/year.

**Special Permit considerations:**

TMDL Reopener is in the permit.

25. **Additional Comments:**

Previous Board Action:

Staff Comments: The VDH commented on that there are no public water supply intakes within 15 miles downstream of the discharge.

Public Comment: The discharge is not controversial; however, the owner submitted comments requesting that 1), the number of discharge weeks and number of samples collected should not be required since they are reporting the number of days discharging and number of samples collected, 2) that acute WET testing should not be required in cold weather, since WWTP logs (new information) shows that polymer was used in the WWTP in cold weather when 2 samples for WET testing were collected, 3) the addition of seasonal ammonia limits, and 4) correction of minor mistakes in the fact sheet. DEQ responded to the owner that 1) the number of discharge weeks is needed to determine whether weekly samples are collected, 2) acute WET testing was removed from the permit, 3) the ammonia limit is technology-based and not eligible for seasonal tiers and 4) correction of the cited mistakes have been corrected.

Other Agency Comments: The US FWS commented that WET testing should be conducted when the flocculating agent CEKA 4645 is being used in the wastewater treatment process, and that the 2013 EPA ammonia criteria should be used to determine whether or not ammonia limits are required for this facility. In response to these comments, annual WET testing in January or February was required, (but subsequently removed based on new information provided by the permittee) and DEQ has not completed the adoption of the 2013 EPA ammonia criteria into its regulations and cannot use these to develop permit limitations. It is noted that only acute criteria apply to this intermittent discharge and that the technology-based ammonia limits appear to be lower than those that would be based on the 2013 criteria. Changes to the draft permit were communicated to the US FWS in an email on November 7, 2014.

List of Appendices

APPENDIX A - Flow Diagrams, USGS Map, Site Visit Memo, Effluent DMR Data, NPDES Permit Rating Worksheet

APPENDIX B - Flow Frequency Memorandum, Receiving Stream data

APPENDIX C - Mix.exe printout, WLA Spreadsheet, Stats.exe output, Dissolved Oxygen model output, Federal Effluent Limit Guidelines

APPENDIX D - Addendum to the Big Otter River Basin Fecal Coliform TMDLs (January 2001)